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The Mineral Industry of Pennsylvania
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COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF INTERNAL AFFAIRS
GENEVIEVE BLATT, *Secretary*

TOPOGRAPHIC AND GEOLOGIC SURVEY
CARLYLE GRAY, *State Geologist*

1956

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The Mineral Industry of Pennsylvania¹

This chapter has been prepared under a cooperative agreement for the collection of mineral data between the Bureau of Mines, United States Department of the Interior, and the Pennsylvania Topographic and Geologic Survey.

By Alvin Kaufman¹



THE MINES and quarries of Pennsylvania produced a wide variety of mineral commodities in 1953, ranging from fuels to nonmetals. Of these, the most important economically were coal, cement, stone, petroleum, and natural gas. The output of the last two was obtained mainly from the western and north central counties. Bituminous-coal production centered in the southwestern and central counties, with anthracite in the northeast. The cement and stone

TABLE 1.—Mineral production in Pennsylvania, 1952–53¹

Mineral	1952		1953	
	Short tons (unless otherwise stated)	Value	Short tons (unless otherwise stated)	Value
Cement.....376-pound barrels.....	40, 037, 761	\$103, 388, 586	42, 093, 765	\$114, 002, 846
Clays.....	3, 731, 130	12, 639, 864	3, 575, 422	9, 988, 133
Coal:				
Anthracite.....	40, 582, 558	379, 714, 076	30, 949, 152	299, 139, 687
Bituminous.....	89, 181, 232	473, 475, 646	93, 330, 871	516, 490, 411
Cobalt (content of ore).....pounds.....	639, 856	(²)	564, 450	(²)
Copper (recoverable content of ores, etc.).....	3, 485	1, 686, 740	3, 027	1, 737, 498
Gold (recoverable content of ores, etc.).....				
troy ounces.....	1, 500	52, 500	1, 134	39, 690
Iron ore (usable).....long tons, gross weight.....	992, 110	(²)	1, 020, 826	(²)
Lime (open-market).....	1, 202, 981	13, 842, 213	1, 335, 300	16, 010, 114
Natural gas.....million cubic feet.....	108, 684	30, 758, 000	105, 558	30, 717, 000
Natural-gas liquids:				
Natural gasoline.....thousand gallons.....	7, 182	548, 000	(²)	(²)
LP-gases.....do.....	798	75, 000	1, 008	90, 000
Peat.....	7, 898	43, 874	8, 232	47, 516
Petroleum (crude).....thousand 42-gallon barrels.....	11, 233	47, 740, 000	³ 10, 649	³ 45, 680, 000
Sand and gravel.....	14, 696, 106	19, 920, 003	14, 715, 383	20, 692, 391
Sericite schist.....			2, 463	⁴ 4, 926
Silver (recoverable content of ores, etc.).....				
troy ounces.....	9, 247	8, 369	6, 972	6, 310
Slate.....	214, 860	4, 487, 648	202, 386	4, 419, 612
Stone (except limestone for cement and lime).....	⁵ 25, 609, 812	⁵ 44, 676, 456	⁵ 26, 192, 607	⁵ 48, 094, 029
Undistributed: Graphite (crystalline, 1953), mica, pyrites, ground sand and sandstone, stone (dimension basalt), recovered elemental sulfur, tripoli, and minerals whose value must be concealed for particular years (indicated in appropriate column by footnote reference 2). Excludes value of clays used for cement.....		⁶ 12, 575, 843		14, 461, 911
Total Pennsylvania.....		⁶ 1, 145, 633, 000		1, 121, 622, 000

¹ Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

² Value included with "Undistributed."

³ Final figure. Supersedes preliminary figure given in commodity chapter.

⁴ Estimate.

⁵ Excludes certain stone, value for which is included with "Undistributed."

⁶ Revised figure.

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industries had their largest production in the east and southwest, respectively.

The major producing counties—in order of decreasing value—were Luzerne, Washington, Schuylkill, Cambria, Greene, Allegheny, Northampton, and Fayette. All except Northampton owed their predominant position to output of coal.

In 1953 nearly 78 percent of the value of Pennsylvania's mineral output was attributable to fuels, 21 percent to non-metals, and 1 percent to metals, virtually all of the last was iron ore or byproducts of that commodity. The value of Pennsylvania mineral production declined 2 percent from 1952, principally because of a drop in anthracite output.

REVIEW BY MINERAL COMMODITIES

MINERAL FUELS

Coal.—Both anthracite and bituminous coal were mined in Pennsylvania. Bituminous or soft-coal beds underlie the western and central sections of the State. The anthracite or hard-coal deposits occur in the northeastern part of the Commonwealth. The production of anthracite in 1953 dropped 24 percent from that in 1952. In an attempt to combat the competition of petroleum and natural gas, in the spring of 1953, the industry organized the Anthracite Information Program and also began retrenching by closing inefficient mines and collieries. The year was characterized by bitter price wars in an attempt to capture what remained of the market. This was particularly underlined by the offering of freezers, trips to Bermuda, etc., as premiums for the purchase of carlots of anthracite by retail dealers.

Bituminous-coal production in 1953 was 5 percent above that in the previous year. The desire to achieve greater efficiency was characterized by modernization of facilities, including the opening of a new portal by Emerald Coal & Coke Co. in Morgan Township, Greene County.

TABLE 2.—Production of Pennsylvania anthracite, 1952–53, by counties, in short tons

County	1952	1953	County	1952	1953
Carbon.....	1,844,775	1,658,103	Northumberland.....	5,550,898	4,269,136
Columbia.....	647,514	637,989	Schuylkill.....	13,287,747	10,145,533
Dauphin, Susquehanna and Wayne..	102,895	295,968	Sullivan.....	24,055	17,227
Laekawanna.....	5,323,145	3,799,331	Total.....	140,315,871	130,715,339
Luzerne.....	13,534,842	9,892,047			

¹ Excludes counties producing dredge coal only.

Petroleum and Natural Gas.—As a result of exploratory drilling early in 1953, the largest Oriskany-sand gas pool was discovered in southeastern Elk County. This was known as the Benezette pool and is an extension of the Benezette-Driftwood field. There were 2 other discoveries of minor significance in 1953, 1 at the Oriskany horizon in western Clearfield County and the other in the Albion (Median) sand in southeastern Erie County.²

² Fettke, Charles R., Oil and Gas Developments in Pennsylvania in 1953: Pennsylvania Topog. and Geol. Survey, Progress Rept. 144, 16 pp.

TABLE 3.—Production of bituminous coal, by counties, 1952-53

(Exclusive of mines producing less than 1,000 tons)

County	1952		1953	
	Short tons	Average value per ton	Short tons	Average value per ton
Allegheny.....	9,614,860	\$5.30	9,853,970	\$5.63
Armstrong.....	3,361,174	4.35	3,167,397	4.02
Beaver.....	455,384	4.29	461,142	3.87
Bedford.....	247,058	5.99	144,651	6.25
Blair.....	209,400	4.32	155,884	4.22
Bradford.....	9,739	5.12	10,353	4.90
Butler.....	1,897,263	4.02	2,013,625	3.93
Cambria.....	12,339,260	6.09	11,982,351	6.44
Cameron.....	66,206	3.87	51,536	3.93
Centre.....	1,096,230	3.95	1,022,257	3.55
Clarion.....	2,258,494	3.66	2,201,759	3.59
Clearfield.....	6,025,719	4.53	5,525,258	4.35
Clinton.....	630,972	3.26	590,967	3.07
Elk.....	617,535	4.26	514,960	3.95
Fayette.....	7,581,264	5.77	9,105,610	6.13
Greene.....	9,598,195	5.69	11,743,043	5.91
Indiana.....	6,288,635	5.24	5,848,703	5.22
Jefferson.....	1,726,513	4.20	1,687,222	4.02
Lawrence.....	287,702	3.61	677,344	3.90
Lycoming.....	31,961	4.47	(1)	(1)
McKean.....	43,847	3.39	79,001	3.26
Mercer.....	529,542	4.14	554,812	4.19
Somerset.....	5,301,972	5.22	4,036,308	5.19
Tioga.....	71,935	5.37	70,204	5.44
Venango.....	511,039	3.50	587,718	3.54
Washington.....	13,369,226	5.76	16,198,151	6.17
Westmoreland.....	4,588,705	5.33	4,585,003	5.79
Other counties: Fulton and Huntingdon (Lycoming, 1953).....	421,402	6.21	400,642	5.89
Total.....	89,181,232	5.31	93,330,871	5.53

¹ To avoid disclosure of individual company data, production from Lycoming County is included with Fulton and Huntingdon.

In all, 204 deep wells (Middle Devonian or deeper) were completed in 1953 compared with 160 the previous year. Of these, 134 were gas wells. There were 1,770 shallow wells (Upper Devonian or higher) drilled during the year.

Crude-oil production in 1953 totaled 10,649,000 barrels compared with 11,233,000 barrels in 1952. Natural-gas output declined to 106 billion cubic feet in 1953 compared with 109 billion cubic feet the previous year. In addition to the production of natural gas, natural gasoline and LP-gases were produced as byproducts. Both compression and absorption methods were utilized.

METALS

Iron Ore.—The Bethlehem Steel Co. Cornwall mines in Lebanon County were Pennsylvania's only metallic ore producers in 1953. This property yielded a magnetic iron ore with byproduct recovery of pyrite and chalcopyrite, containing sulfur, copper, gold, silver, and cobalt, all of which were recovered through iron-ore beneficiation. Bethlehem Steel Co. continued to develop the Grace iron mine, Morgantown, Berks County. Shaft A was sunk to a depth of nearly 1,300 feet, and Shaft B was below 700 feet at the end of the year. In addition, much of the surface construction, such as mine office, changehouse, main hoist, etc., was completed during 1953. The railroad spur and loading tracks were also finished.

Manganese.—Early in 1953 a syndicate of West Virginia businessmen, operating under the name of Manganese Development Co., began strip mining a 400-foot-wide manganese deposit in Sherman Valley near Cypher in eastern Bedford County. The company erected a crusher and log washer on Groundhop Hollow Road. The operation was economically unsuccessful, and activity ceased at the end of the year.

Zinc.—Although no mine production of zinc was recorded in the State in 1953, activity of the New Jersey Zinc Co. at Friedensville, Lehigh County, promises to make Pennsylvania again a producer of zinc ore. The New Jersey Zinc Co. reported that the shaft hoist and other facilities for the new mine were complete. Major efforts during 1953 had been directed, however, to dewatering the mine.

NONMETALS

Cement.—The production of cement from Pennsylvania plants increased 9 percent in 1953 compared with 1952. Shipments from these operations in 1953 were 705,600 barrels less than production. As a result, stocks increased 30 percent from those at the beginning of the year. Pennsylvania cement production is concentrated in two major areas. The larger consists of Lehigh and Northampton Counties in the northeastern part of the State; these 2 counties, with 16 mills, supplied 70 percent of the cement shipped in 1953. The second center of production is in the densely populated region of western Pennsylvania, comprising Allegheny, Butler, and Lawrence Counties. The five producing plants in this area utilize the Vanport limestone. Major cement producers in Pennsylvania in 1953, in order of decreasing output, were: Universal-Atlas Cement Co., Universal and Northampton; Penn-Dixie Cement Co., Bath, Nazareth, and West Winfield; and Lehigh Portland Cement Co. with operations at Sandt's Eddy, Fogelsville, and Ormrod.

TABLE 4.—Finished portland cement produced, shipped, and in stock, 1944–48 (average) and 1949–53

Year	Active plants	Production (barrels)	Shipped from mills			Stocks at mills on December 31 (barrels)
			Barrels	Value		
				Total	Average per barrel	
1944-48 (average)-----	24	25,753,088	26,349,807	\$47,434,194	\$1.73	2,529,887
1949-----	24	38,122,065	36,905,254	84,839,175	2.30	3,275,594
1950-----	24	38,646,260	39,450,611	94,604,230	2.40	2,471,243
1951-----	24	41,981,431	41,560,431	107,035,506	2.58	2,892,243
1952-----	24	39,437,971	40,037,761	103,388,586	2.58	2,292,453
1953-----	24	42,799,409	42,093,765	114,022,846	2.71	3,096,232

Clays.—Pennsylvania clay production dropped 4 percent below 1952. The 102 clay pits active in Pennsylvania in 1953 produced kaolin, fire clay, and miscellaneous clays and shales. Of these, fire clay was the most important and represented 80 percent of the value of all clays. Fire clay was used principally for refractory and heavy clay products and was produced predominantly in Clearfield, Beaver, and

Jefferson Counties. The major producing companies continued to be Harbison-Walker Refractories Co., Hanley Co., and General Refractories Co.

Miscellaneous clays and shales were used largely for building brick and other structural clay products. The major producing counties were Allegheny, Berks, and Northumberland. The largest producer of this commodity by far was Glen Gery Shale Brick Co. It should be noted that the low value attributed to miscellaneous clays has little bearing on the price of the final product, because the labor and fuels involved in shaping, drying, and firing constitute such a large percentage of the manufacturing costs.

TABLE 5.—Clays sold or used by producers, 1944-48 (average) and 1949-53

Year	Kaolin		Fire clay		Miscellaneous clays		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1944-48 (average).....	31,033	\$114,549	1,577,388	\$5,488,058	1,289,132	\$1,068,912	2,897,553	\$6,671,519
1949.....	52,478	201,576	1,663,564	6,316,196	1,594,729	1,308,907	3,310,771	7,826,679
1950.....	62,626	250,383	1,731,855	7,149,589	1,687,713	1,415,346	3,482,194	8,815,318
1951.....	75,415	306,045	2,205,794	11,653,734	1,949,358	2,127,771	4,230,567	14,087,550
1952.....	(1)	(1)	1,992,099	10,726,085	1,739,031	1,913,779	3,731,130	12,639,864
1953.....	(1)	(1)	1,703,280	8,001,196	1,872,142	1,986,937	3,575,422	9,988,133

¹ To avoid disclosure of individual company figures, kaolin has been combined with fire clay.

TABLE 6.—Clays sold or used by producers in 1953, by kinds and uses

	Fire clay ¹		Miscellaneous clays	
	Short tons	Value	Short tons	Value
Refractories:				
Firebrick and block ²	835,642	\$5,154,320		
Foundries and steelwork.....	82,410	235,616	13,868	\$22,624
Miscellaneous refractories.....	94,334	540,013		
Heavy clay products.....	642,701	1,849,872	1,614,017	1,508,257
Fillers or extenders.....			6,640	28,522
Cement.....	(3)	(3)	216,923	364,101
Undistributed.....	48,193	221,375	20,694	63,433
Total.....	1,703,280	8,001,196	1,872,142	1,986,937

¹ Includes kaolin.

² Includes high-alumina brick.

³ Included with "Undistributed" to avoid disclosure of individual company operations.

Lime.—Pennsylvania lime production increased for the fourth consecutive year, registering a gain of 11 percent. There were 29 plants in operation during the year, of which the major producing units were owned by the Warner Co., National Gypsum Co., H. E. Millard Lime & Stone Co., and the J. E. Baker Co. The major lime-producing counties were Centre and York.

Pyrophyllite (Sericite Schist).—Summit Mining Corp. opened a sericite schist quarry near Bendersville 10 miles northwest of York Springs in June 1953. Quarry output is trucked 22 miles to the company mill at Dillsburg. Output was sold principally as an insecticide filler.

TABLE 7.—Lime sold by producers, 1944-48 (average) and 1949-53, by uses

Year	Agricultural		Building		Chemical and Industrial		Refractory		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1944-48 (average)	155,706	\$1,412,822	61,879	\$738,853	1789,193	\$8,770,099*	(1)	(1)	1,006,778	\$8,921,774
1949	136,199	1,512,069	111,278	1,566,371	1,663,588	7,112,239	(1)	(1)	911,065	10,190,679
1950	135,182	1,530,991	134,052	1,944,178	650,756	7,110,931	166,461	\$2,076,974	1,086,451	12,663,074
1951	134,559	1,532,813	126,048	1,740,850	741,673	8,551,011	178,820	2,435,380	1,181,100	14,260,054
1952	131,007	1,463,596	123,049	1,675,987	768,319	8,228,875	180,006	2,473,755	1,202,981	13,842,213
1953	110,863	1,307,594	114,839	1,575,387	865,747	9,766,852	237,851	3,300,281	1,335,300	16,010,114

* To avoid disclosure of individual company operations, refractory tonnage is included with chemical and industrial.

TABLE 8.—Lime sold or used by producers in 1952-53, by counties

County	1952		1953	
	Short tons	Value	Short tons	Value
Armstrong.....	608	\$7,406	955	\$11,364
Centre.....	481,572	4,816,476	580,050	6,561,742
York.....	¹ 88,397	¹ 1,084,908	144,187	1,932,181
Undistributed.....	¹ 632,404	¹ 7,933,423	610,108	7,504,827
Total.....	1,202,981	13,842,213	1,335,300	16,010,114

¹ Revised figure.

Sand and Gravel.—Sand and gravel output in Pennsylvania increased slightly in 1953 compared with that in the previous year. The major use of these commodities was as building and paving aggregate. Sand and gravel were also utilized for glass, polishing and grinding, filtering, railroad ballast, and molding and traction purposes, as well as various miscellaneous uses. Eighty-one commercial sand and gravel pits were active in 1953. Of these, the major producers were the Dravo Corp. and Iron City Sand & Gravel Corp., both of Pittsburgh; Pennsylvania Glass Sand Co., Lewistown; and the Warner Corp., Philadelphia.

TABLE 9.—Sand and gravel sold or used by producers, 1952-53, by uses

	1952		1953	
	Short tons	Value	Short tons	Value
Sand:				
Molding and fire or furnace.....	445,270	\$1,103,911	495,439	\$1,247,242
Building.....	4,270,064	5,021,197	4,086,393	4,888,762
Paving.....	2,038,867	2,741,982	2,111,500	2,895,286
Grinding, polishing, and blast.....	204,064	414,210	350,376	761,075
Engine.....	226,500	450,112	220,136	440,007
Glass and filter.....	547,969	1,592,924	611,168	1,906,436
Other.....	214,488	435,330	205,944	454,209
Total sand.....	7,947,222	11,759,666	8,080,956	12,593,017
Gravel:				
Building.....	3,907,124	4,862,059	3,917,298	4,835,198
Paving.....	2,709,622	3,145,421	2,578,982	3,096,656
Railroad ballast.....	67,627	45,245	57,956	31,850
Other.....	64,511	107,612	80,191	135,670
Total gravel.....	6,748,884	8,160,337	6,634,427	8,099,374
Grand total.....	14,696,106	19,920,003	14,715,383	20,692,391

Slate.—The value of Pennsylvania slate production declined 2 percent compared with 1952. The output of roofing slates in 1953 dropped 8 percent; production of millstock increased 14 percent. Major producers in 1953 were Funkhouser Co., York County; and North Bangor Slate Co., Anthony Dally & Sons, Capital Slate Co., and Albion Vein Slate Co., all in the Pen-Argyl-Bangor area.

Stone.—Stone production in Pennsylvania in 1953 increased 2 percent compared with 1952. The increase was principally the result of improved sale of limestone for furnace flux. Of the more than 26 million tons of rock mined or quarried in the State during the year,

TABLE 10.—Sand and gravel sold or used by producers in 1952-53, by counties

County	1952		1953	
	Short tons	Value	Short tons	Value
Allegheny.....	1, 232, 355	\$2, 184, 932	1, 176, 987	\$2, 328, 439
Beaver.....	1, 060, 869	1, 395, 564	1, 399, 061	1, 778, 693
Berks.....	23, 666	38, 270	(1)	(1)
Bucks.....	4, 935, 959	5, 787, 287	4, 622, 674	5, 518, 309
Carbon.....	351, 697	440, 256	330, 246	439, 022
Crawford.....	86, 317	90, 117	104, 360	146, 127
Dauphin.....	519, 156	137, 827	344, 704	74, 509
Erie.....	420, 321	448, 252	399, 233	471, 688
Lancaster.....	263, 333	543, 273	(1)	(1)
Luzerne.....	268, 257	335, 994	299, 166	381, 170
Mifflin.....	400, 862	817, 872	(1)	(1)
Somerset.....	2, 269	6, 587	1, 249	2, 355
Undistributed.....	5, 131, 045	7, 693, 772	6, 037, 703	9, 552, 079
Total.....	14, 696, 106	19, 920, 003	14, 715, 383	20, 692, 391

¹ Included with undistributed.

TABLE 11.—Slate sold by producers, 1944-48 (average) and 1949-53, by uses

Year	Number of operators	Roofing		Millstock		Other uses (value)	Total value
		Squares (100 square feet)	Value	Square feet	Value		
1944-48 (average).....	20	105, 604	\$1, 510, 838	1, 952, 608	\$735, 025	\$1, 075, 082	\$3, 324, 946
1949.....	26	112, 870	2, 124, 573	2, 339, 830	1, 243, 798	1, 210, 273	4, 578, 644
1950.....	28	124, 280	2, 341, 127	2, 724, 450	1, 559, 587	1, 645, 300	5, 546, 014
1951.....	25	134, 180	2, 681, 072	2, 589, 090	1, 416, 657	1, 591, 141	5, 688, 870
1952.....	18	93, 200	1, 866, 479	2, 078, 020	1, 227, 471	1, 393, 698	4, 487, 648
1953.....	18	86, 116	1, 688, 167	2, 363, 266	1, 452, 320	1, 279, 125	4, 419, 612

82 percent was limestone. This commodity was used as a fluxing agent, in concrete production, as road material, as railroad ballast, and for agricultural purposes. A total of 12 quarries, all in the southeastern section of the State, produced basalt. This includes those quarries producing diabase and classified by the Bureau of Mines as basalt. The dark color of this traprock limited its use for dimension stone. However, it is an excellent concrete aggregate.

Sandstone for use as dimension stone and, when crushed, for road material and ganister, was produced at 35 quarries in 1953. Ganister was used by several refractory plants in the State in preparing silica brick. Small quantities of various miscellaneous rocks, such as serpentine, soapstone, gneiss, and mica schist, were quarried for local use during the year. An estimated seven miscellaneous stone quarries operated in the State in 1953.

Tripoli.—The material reported as tripoli produced in Pennsylvania was a rottenstone mined from open pits at Antes Fort and Muncy, Lycoming County. It was used predominantly as a filler in manufacturing phonograph records.

TABLE 12.—Stone sold or used in 1952-53, by counties

County	1952		1953	
	Short tons	Value	Short tons	Value
Adams.....	1, 537, 067	\$2, 533, 069	1, 709, 564	\$2, 840, 907
Berks.....	1, 504, 618	2, 215, 276	1, 285, 947	1, 921, 930
Blair.....	712, 010	1, 536, 159	719, 042	1, 553, 391
Bucks.....	443, 773	929, 456	545, 824	1, 077, 378
Butler.....	1, 424, 865	2, 446, 268	1, 637, 341	3, 047, 082
Carbon.....	23, 687	53, 545		
Centre.....	987, 860	1, 879, 197	946, 361	1, 962, 012
Chester.....	864, 888	1, 492, 974	904, 541	1, 511, 107
Clinton.....	106, 769	164, 070	184, 312	273, 705
Cumberland.....	351, 743	539, 957	425, 797	620, 492
Dauphin.....	762, 144	1, 185, 904	1, 011, 884	1, 573, 146
Delaware.....	763, 072	1, 363, 716	867, 486	1, 489, 690
Fayette.....	59, 628	179, 225	26, 797	92, 020
Franklin.....	402, 151	638, 369	386, 469	558, 009
Greene.....	25, 000	50, 000		
Huntingdon.....	600, 155	2, 325, 919	706, 762	2, 522, 074
Juniata.....	97, 935	180, 855	102, 109	187, 889
Lancaster.....	1, 325, 416	1, 944, 724	1, 402, 481	2, 306, 854
Lawrence.....	2, 632, 610	4, 377, 355	2, 109, 010	4, 999, 865
Lebanon.....	1, 280, 841	1, 893, 807	1, 176, 502	1, 956, 494
Lehigh.....	302, 385	388, 014	214, 221	324, 997
Lycoming.....	325, 651	528, 032	354, 559	620, 425
Mifflin.....	841, 479	1, 337, 489	992, 458	1, 132, 528
Monroe.....	39, 085	53, 546	77, 717	170, 336
Montgomery.....	2, 520, 564	4, 242, 792	2, 428, 403	4, 173, 198
Perry.....	77, 225	140, 000		
Schuylkill.....	14, 281	20, 976	24, 362	82, 479
Susquehanna.....	4, 129	56, 480	2, 213	22, 789
Westmoreland.....	417, 805	851, 991	303, 846	778, 761
York.....	1, 288, 589	2, 747, 548	1, 112, 710	2, 526, 760
Undistributed.....	3, 872, 387	6, 379, 743	4, 533, 889	7, 767, 711
Total.....	125, 609, 812	144, 676, 456	126, 192, 607	148, 094, 029

¹ To avoid disclosing confidential information, total is incomplete.

TABLE 13.—Stone sold or used by producers, 1952-53, by uses

Use	1952		1953	
	Quantity	Value	Quantity	Value
Dimension stone:				
Building stone..... short tons.....	¹ 156, 413	¹ \$769, 658	¹ 142, 795	¹ \$749, 909
Monumental stone..... cubic feet.....	19, 449	243, 148	(²)	(²)
Curbing and flagging..... do.....	135, 218	186, 955	78, 205	131, 046
Total dimension stone (approximate equivalent in short tons).....	¹ 169, 324	¹ 1, 199, 761	¹ 148, 947	¹ 880, 955
Crushed and broken stone:				
Riprap..... short tons.....	³ 188, 549	³ 322, 346	³ 164, 096	³ 253, 169
Crushed stone..... do.....	13, 254, 633	19, 160, 967	13, 594, 967	20, 093, 938
Furnace flux (limestone)..... do.....	8, 703, 922	14, 186, 713	9, 351, 478	16, 514, 344
Refractory..... do.....	676, 885	3, 195, 579	588, 583	3, 481, 474
Agricultural (limestone)..... do.....	1, 065, 358	2, 733, 395	895, 093	2, 712, 796
Other uses..... do.....	³ 1, 485, 220	³ 3, 327, 413	³ 1, 426, 249	³ 3, 849, 745
Undistributed..... do.....	65, 921	550, 282	23, 194	307, 608
Total crushed and broken stone..... do.....	25, 440, 488	43, 476, 695	26, 043, 660	47, 213, 074
Grand total.....	125, 609, 812	144, 676, 456	126, 192, 607	148, 094, 029

¹ To avoid disclosing confidential information, certain totals are incomplete.² Included with "Undistributed."³ Incomplete, the portion not included being combined as "Undistributed."

REVIEW BY COUNTIES

ADAMS

Mineral production in Adams County in 1953 was limited to stone, clays, and sericite schist. The county ranked fifth in the State in the value of stone output, most of which was crushed and broken limestone sold primarily for flux, road metal, and agricultural purposes. There was also a substantial output of basalt, which was crushed for use as roofing granules and stone flour. Major stone producers during the year included Bethlehem Quarry Co., Hanover, and the Gingell Quarries Co., Fairfield. Miscellaneous clays were produced by Alwine Brick Co., New Oxford, and Gettysburg Drain Tile Works, Gettysburg, for use in manufacturing brick and tile. Sericite schist, a material similar to pyrophyllite was produced in Adams County in 1953 by Summitt Mining Corp. from a quarry on the Heller farm near Bendersville. Output was used as an insecticide filler.

ALLEGHENY

The major mineral products of Allegheny County in 1953 were bituminous coal, cement, sand and gravel, clay, and stone. The county ranked third in the State during the year in sand and gravel and cement output, fourth in value of dimension-stone production, and sixth in the output of bituminous coal. The wells of the county also yielded petroleum and natural gas; a total of 159,622 barrels of petroleum was recovered, virtually all by secondary methods.

In terms of value, cement was, next to fuels, the most important mineral product of the county. Major producers in 1953 were Universal Atlas Cement Co., Universal, and Pittsburgh Coke & Chemical Co., Green Bag Cement Division, Neville Island.

All county sand and gravel production in 1953 was washed material obtained from river bottoms or old river terraces. Major producers were Dravo Corp. and Iron City Sand & Gravel Corp., both of Pittsburgh. Stone quarries in the county yielded substantial quantities of dimension sandstone for masonry walls and flagging. This material was produced by Elizabeth Stone Co., Elizabeth, and F. Matesia, Cuddy.

Allegheny County in 1953 was the largest source of miscellaneous clays and shale in Pennsylvania. Production was used in manufacturing building brick and tile. Major producers were Glassmere Brick & Tile Co., Glassmere; Milliken Brick Co., Inc., Wilkinsburg; Van Ormer Brick Co., Inc., Pitcairn; and McFetridge Bros. Brick Co., Creighton.

Perlite mined in the western United States was expanded at the Carnegie plant of Perlite Manufacturing Co. and at the Pittsburgh operation of Panacalite Perlite Co. Output was used as a lightweight aggregate.

ARMSTRONG

Mineral resources of Armstrong County consisted of bituminous coal, natural gas, oil, stone, sand and gravel, clays, and lime. Over 51 percent of the coal output was strip-mined. Oil wells yielded 15,138 barrels of crude oil in 1953.

All stone produced in the county was crushed or broken limestone or dolomite used for metallurgical fluxes, concrete aggregate, road material, and agricultural purposes, as well as in the production of lime. Producers of lime included C. D. McCanna lime plant, Walter Hershberger, and Craig Claypoll, all of Kittanning. The major producer of limestone was the Michigan Limestone Division, United States Steel Co., East Brady and Worthington.

Armstrong County was the fourth largest producer of sand and gravel in Pennsylvania in 1953. All output was washed material from J. K. Davison & Bros., Pittsburgh, the county's only producer.

The county ranked fifth among the clay-producing areas of the State in output of fire clay in 1953. Leading producers included Freeport Brick Co., Freeport; Kittanning Refractory Co., Inc., Kittanning; Graff-Kittanning Clay Products Co., Craigsville; Kittanning Brick Co., Adrian; Haws Refractories Co., Bridgeburg; Worthington Ceramics Co., Worthington; and Harbison-Walker Refractories Co., Templeton. The Graff-Kittanning Clay Products Co. and Continental Clay Products Co. also produced miscellaneous clays for use in manufacturing brick, tile, and pottery.

BEAVER

Beaver County mines produced a limited number of mineral commodities in 1953. This lack of diversification was more than compensated for, however, by the county's prominent position in the Pennsylvania clay and sand and gravel industries.

Beaver County ranked second in output of fire clay in Pennsylvania in 1953. Major producers were Negley Fire Clay Co., New Galilee; McLain Fire Brick Co., Vanport; Metropolitan Clay Products Co., Darlington; Standard Clay Mfg. Co., New Brighton; and Eastvale Clay Products Co., Eastvale. A small tonnage of miscellaneous clays was recovered from the pits of Brighton Clay Products Co. and Friedl-Elverson Pottery Co., Inc., both of New Brighton.

The county was the second largest sand-and-gravel-producing area in the Commonwealth. Production was derived from river gravel bottoms, river terraces, and glacial deposits. Five producers operated during the year; the largest were the Dravo Corp., Iron City Sand & Gravel Corp., and Shippingport Sand & Gravel Co. These 3 companies furnished 92 percent of the total county production of sand and gravel in 1953.

Mines in the county yielded a comparatively small tonnage of bituminous coal, with 85 percent of the output from strip pits. Oil wells in the county yielded 14,397 barrels of crude oil and a small quantity of natural gas during the year.

BEDFORD

The major mineral commodity produced in Bedford County in 1953 was limestone, used for concrete aggregate, road material, flux, lime, and agricultural stone. The only producer was New Enterprise Stone & Lime Co., New Enterprise. A considerable quantity of sandstone for refractory purposes was quarried by Leap Ganister Rock Co., Madley.

Mines in the northeast section of the county, which includes the major producing region of the Broad Top field, yielded low-volatile bituminous coal.

A small quantity of building sand was produced during the year by Feight Bros. Co., Everett.

Manganese Development Co. began strip-mining a manganese deposit in Sherman Valley near Cypher. Activity ceased at the end of the year.

BERKS

Cement, stone, clays, and sand and gravel were produced in Berks County in 1953. Cement continued to be the principal mineral commodity in this county. Production was from the Allentown Portland Cement Co. plant at Evansville.

Stone production in 1953 consisted of crushed diabase and limestone. The latter was produced by Berks Products Corp., South Temple; E. J. Breneman, Inc., Pottstown; and Eastern Lime Corp., Kutztown. This limestone was used as a concrete aggregate and for agricultural purposes. Crushed diabase (produced mainly by J. T. Dyer Quarry Co., Monocacy Station) was sold for riprap, concrete aggregate, and railroad ballast.

Glen Gery Shale Brick Corp. produced miscellaneous clays for brick manufacture from its pits at Shoemakersville and Wyomissing.

Sand and gravel produced by J. H. Gring, Sinking Spring, and the Schildt Bros., Temple, was sold for building and paving purposes.

The Bethlehem Steel Co. continued development work on its iron-ore deposit near Morgantown in 1953.

BLAIR

Blair County quarries in 1953 produced limestone for concrete aggregate and agricultural purposes and sandstone for concrete aggregate, railroad ballast, and silica brick manufacture. The largest limestone producer was the New Enterprise Stone & Lime Co., Roaring Spring. Sandstone was quarried by Basalt Trap Rock Co., Woodbury Township; General Refractories Co., Claysburg; and J. L. Hartman Co., Sproul. A small tonnage of bituminous coal was mined in the county, mostly by stripping.

Clay production in Blair County in 1953 was small. The pits of United Clay Mines Corp. near Williamsburg, which had formerly yielded a small quantity of kaolin, were closed during the year. The operation was sold to Grannas Bros. Blair Clay Products Co., Altoona; and Woodbury Clay Co., Houston Township, mined fire clay. Pits of Franktown Sand Supply Co. and George H. Trude, both at Hollidaysburg, yielded a small tonnage of building sand.

BRADFORD

Eight men mined bituminous coal in Bradford County in 1953. Aside from this commodity, sand and gravel for building and paving purposes were produced by Karl D. Shiner, Towanda.

BUCKS

Bucks County ranked first among Pennsylvania counties in the production of sand and gravel in 1953. Most of this material was

dug by floating dredges from the Delaware River flood plain between Morristown and Tullytown. Production was sold for building, paving, and molding purposes. Major producers were Warner Co., Falls Township, A. L. Lewis, New Hope, and Durnan & Good Co., Upper Black Eddy. Stone production included a small quantity of diabase for monuments, architectural uses, concrete aggregate, and railroad ballast, and limestone for agricultural use and concrete aggregate. Major producers of stone were the General Crushed Stone Co., East Rockhill Township; Rushland Quarry Co., Rushland; and New Hope Crushed Stone & Lime Co., New Hope. The Quakertown Brick & Tile Co., Quakertown, produced a small quantity of clays for manufacturing bricks.

BUTLER

The major mineral commodity produced in Butler County in 1953 was bituminous coal. The county's oil wells yielded 215,572 barrels of crude petroleum and a small quantity of natural gas.

On the basis of value, cement output ranked second to fuels. Penn-Dixie Cement Co., Winfield Township, was the only producer. A substantial tonnage of limestone for concrete aggregate, road material, and railroad ballast was quarried during the year. The largest producers were Michigan Limestone Division of United States Steel Corp., Boyers; and Grove City Limestone Co., Osborne. The sole lime producer was Mercer Lime & Stone Co., Branchton.

Fire clay was produced by Pittsburgh & Erie Coal Co., Slippery Rock, and miscellaneous clays by Houston-Starr Co., Mars.

The only sand and gravel producer in the county in 1953 was H. W. Cooper Co., Slippery Rock.

CAMBRIA

Bituminous coal was the major mineral commodity produced in Cambria County in 1953; the county ranked second in Pennsylvania in the production of this material.

This county was also a producer of fire clay. Operators reporting in 1953 were Patton Clay Mfg. Co. and Hiram Swank's Sons, Inc. A small quantity of miscellaneous clays was produced by Triangle Clay Products Co.

CAMERON

Bituminous coal and natural gas were the only mineral commodities produced in Cameron County in 1953. All the bituminous coal was strip-mined; as a consequence, the county's coal industry had the highest production per man-day in the State.

CARBON

The major mineral product of Carbon County was anthracite. Production, approximately 50 percent of which was steam sizes, was valued at \$15,298,556. Carbon County was the second largest source of finished iron oxide pigments in the State in 1953. Products of Prince Mfg. Co., Bowmanstown, the sole producer, included mineral black, brown and red oxides, ocher, sienna, and umber. Sand and gravel was produced by Alliance Sand Co., Inc., Butz Lumber Co., and Wagner Sand Co., Inc.

CENTRE

Mineral products of Centre County in 1953, in order of decreasing value of output, included lime, bituminous coal, stone, and clays. Eighty-six percent of the coal produced was strip-mined. Most of the stone output was crushed limestone, which was used for flux, concrete aggregate, agricultural purposes, metallurgical purposes, and lime. Centre County led the State in lime production, primarily as a result of the widespread occurrence of the Bellefonte ledge in the Pleasant Gap-Bellefonte area. The 1953 output, used for building, agricultural, and chemical purposes, was produced by National Gypsum Co., Benner Township; Warner Co., Bellefonte; and Standard Lime & Stone Co. Limestone for uses other than in limekilns was produced by the above and by Neidigh Bros. Limestone Co., Oak Hall; Valley View Lime Co., Bellefonte; and Whiterock Quarries Co., Pleasant Gap. Crushed sandstone for silica brick was produced during the year by McFeely Brick Co.

General Refractories Co., Orviston, and J. H. France Refractories Co., Snow Shoe, produced a substantial tonnage of fire clay.

CHESTER

Lime, stone, and clays were produced in Chester County in 1953. Stone production included limestone, granite, sandstone, and miscellaneous stone. The principal producers of limestone were Warner Co., Cedar Hollow, and W. Ellis Johnson, Paoli. The output was used for flux, road material, and agricultural purposes, as well as an asphalt filler, and for the manufacture of lime. Lime from the kilns of Warner Co. was used for building, agricultural, and chemical purposes. A large production of diabase was reported by Keystone Trappe Rock Co., Glenmore, and French Creek Granite Co., St. Peters. Most of the output from these two operations was sold for concrete aggregate, although there was a small production of dimension stone for construction and architectural uses. A small quantity of dolomite was quarried for the production of magnesia during the year. Crushed and broken miscellaneous stone for use as concrete aggregate was produced by Bradford Hills Quarry, Inc., Downingtown.

Miscellaneous clays were produced by the McAvoy Vitriified Brick Co., Phocnixville, and a small quantity of fire clay was recovered by Phillip D. Cope, Lincoln University.

CLARION

Mineral commodities produced in Clarion County in 1953 were bituminous coal, natural gas, oil, and clays. As a result of the limited thickness of most of the coal beds, a very substantial portion was produced by stripping. Oil wells in the county reported production of 59,291 barrels of crude oil in 1953. Fire clay was obtained from the Lower Clarion formation and flint clay from the Mercer beds. Producers of these materials were McLain Fire Brick Co., St. Charles; Climax Fire Brick Co., Climax; and Frank B. Pope Co., Mayport, and New Bethlehem Tile Co., New Bethlehem. New Bethlehem Tile Co. was also the only producer of miscellaneous clays.

CLEARFIELD

Clearfield County ranked first among Pennsylvania counties in the production of clays in 1953. Virtually all the output was fire clay, although a small tonnage of common clay was produced by Robinson Clay Products Co., Clearfield. This company, as well as Harbison-Walker Refractories Co. (Mineral Springs and Wallacetown), Williams Grove Clay Products Co. (Bigler), Clearfield Clay Products Co. and Laclede-Christy Co. (Clearfield), and North American Refractories (Grampian and Lutherburg), mined high-grade flint clay for refractory use. Herman Kephart discontinued operations at Osceola Mills in 1953. A high-alumina clay for special high-temperature brick and cement was produced from the Mercer horizon at Curwensville and Morgan Run. Bells Landing Sand & Gravel Co., Bells Landing, produced building sand and gravel. Bituminous coal was mined from several beds, some of them less than 2 feet thick. The high quality of the coal and low cost of strip mining made possible economic recovery from the thin beds. A small quantity of natural gas was produced in the northwestern part of the county.

CLINTON

Mineral products of Clinton County in 1953 included soft coal, natural gas, clays, and crushed stone.

Fire clays were mined by North American Refractories Co., Lock Haven; General Refractories Co., Beech Creek; Harbison-Walker Refractories Co., Monument; and Kelsey Mining Co., Gallagher Township. In addition, the Mill Hall Clay Products Co., Mill Hall, reported a small quantity of common clay.

In the southern end of the county Lycoming Silica Sand Co. quarried limestone, which was crushed and broken for concrete aggregate, road material, and railroad ballast. Production of natural gas from the Leidy field continued in 1953.

COLUMBIA

Common clay was produced by Alliance Clay Products Co. from its pit at Mifflinville. Bloomsburg Sand & Gravel Co. operated a pit in Scott Township and recovered sand and gravel for local use. Anthracite was produced from several mines in Conyngham Township.

CRAWFORD

Crawford County's major natural resources are oil and gas. In 1953 crude oil and natural gas were produced almost entirely by repressurizing old oil-bearing sands. The production of crude oil in 1953 was 39,383 barrels.

Pits in the county yielded substantial tonnages of sand and gravel for building and paving purposes. Major producers were the W. L. Dunn Co., Cochranton; Moyer Bros. Sand & Gravel Supply Co., Conneaut Lake; and Meadville Supply Co., Meadville.

CUMBERLAND

Clay and stone were the only mineral products of Cumberland County in 1953. This county was the major source of kaolin in Pennsylvania. Output during the year was sold as a cement whitener

by the only producer, Philadelphia Clay Co., Mount Holly Springs. Stone production was limited to crushed limestone used for road material and construction purposes. Major producers were Hempt Bros., Eberlys Mill; J. F. Sours, Bonny Brook quarry, Carlisle; Valley Quarries, Inc., Chambersburg; and R. W. Smith, Dillsburg.

DAUPHIN

The principal mineral product of Dauphin County in 1953 was crushed limestone sold for flux and other metallurgical uses, concrete aggregate, railroad ballast, clay filler, and stone sand. Major producers were Bethlehem Quarry Co., Steelton; H. E. Millard Lime & Stone Co., Swatara Station; and Hoffman Bros. & Wilson, Inc., Swatara Township. H. E. Millard Lime & Stone Co. also produced lime, principally for agricultural use.

A substantial tonnage of sand and gravel for building and paving was recovered from pits on the Susquehanna River terrace by Highspire Sand & Gravel Co., Ltd., Highspire, and F. H. Downey, Inc., Harrisburg. Glen Gery Shale Brick Corp., Middletown, and Bethlehem Quarry Co., Steelton, reported production of miscellaneous clays.

Mines near Lykens, Wiconisco, and Williamstown yielded a small tonnage of anthracite during the year.

DELAWARE

Delaware County ranked second in the Commonwealth in production of granite dimension stone in 1953. Output was sold as irregular blocks for facing buildings and bridges, as well as for rubble. A small tonnage of the granite was crushed for stone sand. Major producers were Carl Galantino, East Lansdowne; Lima Building Stone Quarry, Inc., Lima; and Luglios Quarries and Media Quarry Co. (formerly John Randazzo), both at Media. There was also a substantial production of a crushed granite-gneiss for concrete aggregate.

The Philadelphia Brick Co. produced clays from its open pit in Darby Township. Output of expanded perlite was reported by Perlite Products, Inc., Primos.

ELK

Bituminous coal, crude oil, natural gas, and clay were produced in Elk County in 1953.

The major soft-coal-producing bed in the county is the Lower Kittanning, which was mined in Benzette, Jay, and Fox Townships. Over half of the 1953 coal output was from strip mines. Oil wells yielded 32,097 barrels of crude oil and some natural gas during the year.

Fire clay was produced at the Meyer clay mine and open pit of St. Marys Sewer Pipe Co., both in St. Marys. This material is used for manufacture of firebrick and heavy clay products.

ERIE

Erie County was a comparatively unimportant producer of mineral commodities. In 1953 the Kelly Island Lime & Transport Co. and the Nickel Plate Sand & Gravel Co., Erie, were the major pro-

ducers of sand and gravel. Output was predominantly from old lake terraces. There was also an output of natural gas from the Albion sand in the Corry field.

FAYETTE

Bituminous coal continued to be the major mineral commodity produced in Fayette County, and in 1953 the county ranked fifth in the State in coal production. A high percentage of the annual production was used in manufacturing the famous Connellsville coke. A comparatively small quantity of natural gas was recovered from wells in anticlines in the western section of the county and from the crest of Chestnut Hill. Crude-oil production totaled 735 barrels in 1953.

The mineral commodities ranking second in value in Fayette County were sand and gravel obtained from river beds and terraces. Principal producers were McClain Sand Co., Inc., Point Marion, and Dunbar Corp., Dunbar. The sand was sold for glass, molding, blast, fire, building, paving, and engine use. The gravel was used for building and paving purposes. Sandstone was quarried at several localities during the year. When crushed and broken, this material was used for silica brick, concrete aggregate, and road material. In dimension form it was used as irregular blocks for finishing buildings and bridges. The one producer of dimension sandstone was Lynn Quarry. The crushed and broken material was produced by General Refractories Co., Childs.

Flint and plastic clays for refractory use were recovered from pits worked by Big Savage Refractory Corp., Layton Fire Clay Co., Layton, and Eureka Fire Brick Works, Mount Braddock. Layton Fire Clay Co. also produced common clays.

FOREST

Forest County was in the center of the Commonwealth's oil and gas belt. Wells in the county in 1953 yielded 72,908 barrels of crude oil, mostly from the Venango, Warren, Bradford, and Elk sands. Virtually all output during the year was by secondary recovery.

FRANKLIN

The major mineral commodity produced in Franklin County in 1953 was crushed and broken limestone principally for concrete, road metal, and agricultural purposes. Producers active during the year included Fry Coal & Stone Co., Mercersburg; Valley Quarries, Inc., Chambersburg; Binkley Bros., Inc., Dry Run; and Stewart Gaston, Shippensburg. A small tonnage of agricultural lime was produced at the plant of Frank L. Heinbough, Mercersburg. Mount Cydonia Sand Co., Inc., recovered sand for building purposes from its open pit in Greene Township.

FULTON

A small tonnage of bituminous coal was produced from mines in the northwest corner of Fulton County, an extension of the Broad Top field of Bedford County. Limestone for concrete and road metal was quarried by H. B. Mellott Estate, Inc., McConnellsburg;

and Oscar Martz Co. produced agricultural lime at its plant in Knobsville.

GREENE

The principal mineral product of Greene County in 1953 was bituminous coal. Production exceeded 11 million tons, virtually all recovered by underground mining. Crude oil and natural gas were produced from the Upper Nineveh, Lower Nineveh, and Grodon Stray sands. The county yielded 62,893 barrels of petroleum in 1953.

Greene County Brick & Stone Co., Waynesburg, had a small production of miscellaneous clays.

HUNTINGDON

Huntingdon County ranked second among Pennsylvania counties in the production of sandstone and fourth in value of output of sand and gravel. Sandstone producers included Harbison-Walker Refractories Co., North American Refractories Co., and General Refractories Co., all at Mount Union. Their output was utilized in producing silica brick. White clay for refractory cement and furnace linings was recovered from pits of Harbison-Walker Refractories Co. The Alexandria Fire Clay Co., Alexandria, did not operate in 1953.

Sand produced by Pennsylvania Glass Sand Corp. and Alexandria Fire Clay Co. was sold for use as glass, molding, building, fire, and engine sand.

Crushed and broken limestone for concrete aggregate, railroad ballast, and agricultural stone was quarried in Spruce Creek Township by Warner Co. near McConnellstown by New Enterprise Stone & Lime Co. Tyrone Lime & Stone Co., Tyrone, also produced a substantial quantity of this commodity.

Mines in the extension of the Broad Top field in the southern part of the county yielded soft coal.

INDIANA

Coal, clays, and limestone were produced in Indiana County in 1953. The major mineral commodity was bituminous coal; of the more than 5 million tons produced, only 1,013,164 tons was strip mined.

Hiram Swank's Sons, Inc., Clymer, produced fire clay for refractory use. The Hillsdale agricultural lime plant of New Castle Lime & Stone Co., which had been destroyed by fire early in 1952, did not resume production in 1953.

JEFFERSON

Jefferson County ranked second in the State in the production of clays in 1953. Virtually all the output was fire clay produced by Haney Co., Summerville; and Brockway Clay Co., Brockway. The only producer of miscellaneous clays was Falls Creek Clay Products Co., Falls Creek.

Fuels produced in the county during the year included crude oil and natural gas from wells in the northwest part of the county and bituminous coal, most of which was strip-mined.

Iron oxide pigments were produced at the plant of Vitro Pigments, Inc. Agricultural limestone was produced by L. T. Van Norman.

JUNIATA

In terms of value, sandstone (quarried by National Refractories Co., Van Dyke, and used in silica brick) was the most important mineral product of Juniata County in 1953.

Crushed limestone for use as concrete aggregate was quarried by W. N. Quigley in Fermanagh Township.

The Jay A. Fulkroad & Son partnership near McAlisterville was dissolved in 1953; consequently there was no lime production in the county.

LACKAWANNA

Anthracite was the only mineral commodity produced in Lackawanna County in 1953. The county ranked fourth in the State in output of this material.

LANCASTER

Lancaster County was one of the principal sources of limestone in Pennsylvania in 1953. This stone was crushed and broken and sold for use as concrete aggregate and road material. A small quantity of dimension stone for irregular blocks was quarried by D. M. Stoltzfus & Son, Inc., Talmage, and J. C. Showalter Co., Blue Ball. The Stoltzfus Co., Brinkley & Ober, Inc., and A. G. Kurtz & Sons, Ephrata, were the major producers of limestone in 1953.

Lancaster County was also one of the few areas in the State in which lime was produced from dead-burned dolomite. J. E. Baker Co., Billmeyer, and Stoltzfus Co. were the only producers of this commodity.

Sand for building, paving, and fire purposes was recovered from pits operated by A. T. Harris Sand Co., Salisbury Township, and Milton Gravel Sand, Inc., East Petersburg. Clay for brick manufacture was produced in 1953 by Glen Gery Shale Brick Co., Ephrata, and Lancaster Brick Co., Manheim Township.

LAWRENCE

Lawrence County ranked first in limestone and total stone output in Pennsylvania in 1953. The limestone quarried in the county ranges from 81 to 97 percent pure calcium carbonate and was mined from large quarries, several of which had working faces nearly 1 mile long. Major producers were Michigan Limestone Division, United States Steel Corp., Hillsville, and New Castle Lime & Stone Co. Output during the year was sold for flux, miscellaneous metallurgical uses, concrete road metal, and agricultural purposes.

The cement industry of the county has been based upon the abundance of exceptionally pure limestone. Plants utilizing this rock for cement production in 1953 were Bessemer Limestone & Cement Co., Bessemer, and Medusa Portland Cement Co., Wampum.

The Mahoning Valley Sand Co., West Pittsburgh, and the Superior Sand-Supply Co., New Castle, produced a substantial tonnage of sand and gravel for building and paving use in 1953.

Fire clay was produced by the Metropolitan Brick Co., Inc., Bessemer, and common clays by the Fenati Brick Co., Inc., and Keystone Sand & Gravel Co., both of New Castle.

The county also produced a small tonnage of soft coal, all by strip mining.

LEBANON

Lebanon was the only county in Pennsylvania in which metallic ores were produced. All of this material was from the Bethlehem Steel Co. Cornwall mine, which operated continuously during the year. The magnetite iron ore of the Cornwall mine yielded iron, gold, silver, copper, cobalt, and pyrite in 1953.

Quarries yielded large quantities of stone, principally limestone, during the year. This output was used for flux, as a filler, and for agricultural purposes, as well as concrete aggregate. The largest producers are H. E. Millard Lime & Stone Co., Annville; Calcite Quarry Corp., Lebanon; and Pennsylvania Aggregates Co., Cornwall.

In addition, a small quantity of building sand was produced by Reber Sand & Coal Co., Lebanon.

LEHIGH

Lehigh County ranked second to Northampton in cement production in 1953. Producers were Lehigh Portland Cement Co., Fogelsville and Ormond; Whitehall Cement Manufacturing Co., Cementon; Giant Portland Cement Co., Egypt; and Coplay Cement Mfg. Co., Whitehall Township. The county continued to be one of the most productive slate areas in the United States. Slate quarried in 1953 was processed into a diversity of products, including roofing, flagging, and electrical slate; blackboards, bulletin boards; and structural and sanitary products. Producers during the year were Penn Big Bed Slate Co., Inc., and Francis Schleicher & Son.

Other mineral products of Lehigh County in 1953 included limestone and expanded perlite. Crushed limestone for concrete aggregate and road material was quarried by Lehigh Stone Co., Ormond. Perlite from mines in western United States was expanded at the Allentown plant of Pennsylvania Perlite Corp. for use as a lightweight aggregate.

LUZERNE

Luzerne County dropped to second place as a source of anthracite in the United States. Production followed the industry trend and decreased compared with the previous year. Other mineral products produced during the year included stone, sand and gravel, and clay. Sandstone from the quarries of General Crushed Stone Co., White Haven, and Coon Certified Concrete Co., Luzerne, was used for flagging and crushed for railroad ballast, concrete aggregate, and road material. Airport Sand & Gravel Co. (Wyoming), Honey Hole Sand & Stone Co. (Hazleton), Banks Stone & Sand Co. (Kings-ton), and Glendale Sand & Stone Co. (Avoca) were major producers of sand and gravel primarily for use in building and paving and as railroad ballast. Miscellaneous clays were mined by Hazleton Brick Co. from its open pit in Hazel Township.

LYCOMING

Lycoming County was one of the major sources of iron oxide pigments in Pennsylvania in 1953. Keystone Filler & Mfg. Co. and Pennsylvania Paint & Filler Co. produced mineral blacks and natural red oxides. These companies also mined colored shale and tripoli (rottenstone) for use as paint and phonograph-record filler, respectively.

Sand and gravel, mostly dredged from the Susquehanna River, were sold for molding, building, paving, and engine uses, as well as for railroad ballast. Lycoming Silica Sand Co., Fairfield Township, and J. A. Eck & Sons, Inc., were the principal producers of these mineral products.

Stone production in 1953 consisted mainly of crushed limestone for road material and agricultural and concrete uses. Major producers were Lycoming Silica Sand Co., Muncy Township; Pine Creek Lime & Stone Co., Porter Township; and K. Fromm.

McKEAN

McKean County continued in 1953 to rank first among Pennsylvania counties in the production of crude oil and natural gas. During the year 8,742,008 barrels of crude petroleum was obtained from 101,775 acres of oil-bearing land. Hanley Co., Lewis Run, produced miscellaneous clays. Mount Jewett Fire Clay Co., Mount Jewett, produced fire clay, and Kaul Clay Products Co., Clermont, reported an output of both types. Molding sand was recovered by C. L. McGavern, Jr.

MERCER

Structural sand and gravel were produced by the Liberty Stone Products Co., West Middlesex.

Mines and wells in the county also produced small quantities of bituminous coal, oil, and natural gas in 1953.

MIFFLIN

Mineral commodities produced in Mifflin County in 1953 included stone, lime, and sand. Virtually all the stone output was limestone from quarries of Bethlehem Quarry Co., Naginey. Production was used for flux, concrete aggregate, railroad ballast, stone sand, and agricultural purposes. The Haws Refractories Co., Hawstone, quarried sandstone for use in silica-brick manufacture.

The only producer of agricultural and chemical lime in 1953 was Lewistown Lime Co., Shrader.

Pits of Pennsylvania Glass Sand Corp., Wayne Township, and Miller Silica Sand Co., Burnham, yielded glass, molding, building, grinding, fire, and engine sand, as did those of James R. Kline's Sons.

MONROE

The only mineral production reported from Monroe County in 1953 was limestone from the Thomas P. Rogers Co. quarry near Stroudsburg and building sand and gravel from the Steward & Clyde

White pit near the same town. The limestone output was crushed and sold for use in concrete and as road material.

MONTGOMERY

In 1953 Montgomery County ranked second among Pennsylvania counties in the production of dimension stone and third in the output of all types of stone.

Most of the stone output was limestone and dolomite used for flux, concrete, refractories, agriculture, magnesia production, and a filler in asphalt. Major producers were Bethlehem Quarry Co., Bridgeport; G. & W. H. Corson, Inc., Plymouth Meeting; and Stowe Trap Rock Co., Oreland. Dimension stone quarried during the year and sold as irregular blocks consisted of sandstone, granite, and basalt. Sandstone was produced by William Bambi & Sons Co., Norristown, and M. & M. Stone Co., Harleysville; granite by Marcolina Bros., Inc., Chestnut Hill; and basalt by R. K. Kibblehouse, Perkiomenville, and Montgomery Stone Co., Montgomeryville. Firestone Products Co., Inc., Edge Hill, and M. & M. Stone Co. produced crushed and broken sandstone for silica brick, concrete aggregate, and road material. Firestone Products Co., Inc., and Anthony Manero & Sons Co., Edge Hill, produced miscellaneous types of rock, which were sold for rough and dressed building stone and for refractory purposes.

Montgomery was the only county in Pennsylvania in which magnesium compounds were produced. Keasby & Mattison Co., Ambler, and Phillip Carey Mfg. Co., Plymouth Meeting, used the Pattinson process to recover precipitated magnesium carbonate and extra light-light magnesias, from dolomite.

In 1953 Allentown Portland Cement Co., West Conshohocken, and Wm. Bambi & Sons, Inc., were the only producers of cement and sand and gravel, respectively.

The Norristown Brick Co. (Norristown), Keller-Whilldin Pottery Co. (North Wales), Robinson Clay Products Co. (Pottstown), and Lansdale Brick Products Co. (Lansdale), produced miscellaneous clays.

Montgomery County ranked sixth among Pennsylvania counties in output of lime in 1953. Lime suitable for use as building, agricultural, and chemical lime and dead-burned dolomite were produced by G. & W. H. Corson, Inc., Warner Co., and Cordol Corp., all of Plymouth Meeting.

MONTOUR

The major mineral commodity produced in Montour County in 1953 was limestone from Mausdale Quarry Co., Grovania, and Narehood Bros., Milton. Output was used as concrete aggregate and for road material. A small quantity of agricultural lime was produced at the plant of Harry Tittle Co.

NORTHAMPTON

Northampton County ranked first in the output of cement, slate (value), and iron oxide pigments in Pennsylvania in 1953. Major producers of the latter were C. K. William & Co., and Reichard-

Coulston Co. The State cement industry was concentrated to a large extent in this county. Of the 24 plants operating in Pennsylvania in 1953, 11 were in Northampton County. In addition, over half of the value of the State production came from this area. Major producers were Universal Atlas Cement Co., Northampton; Keystone Portland Cement Co., Bath; Hereules Cement Corp., Stockertown; Alpha Portland Cement Co., Martins Creek; and the Lone Star Cement Corp., Nazareth.

A substantial portion of the Nation's slate production was quarried in Northampton County. Output in 1953 was sold for roofing, structural, and sanitary uses, as well as for blackboards and flagging. Of the 15 plants reporting production in 1953, the largest were Albion Vein Slate Co., Plainfield Township; Capitol Slate Co., Inc., East Bangor; and North Bangor Slate Co., Bangor.

Mines, pits, and quarries in the county also yielded limestone for concrete aggregate, railroad ballast, and stone sand, as well as building and paving sand and gravel. Limestone was quarried by Bethlehem Quarry Co., Bethlehem; Binkley Bros., Inc., Newport; Eugene Meekley, Herndon, and Trumbower Co., Inc., Nazareth. Portland Sand & Gravel Co., Portland, and W. J. Lowe & Sons Co., Easton, produced sand and gravel.

NORTHUMBERLAND

The major mineral commodity produced in Northumberland County in 1953 was anthracite. A substantial output of crushed sandstone was also quarried by L. E. Kocher Co. The crushed material was used as concrete aggregate, road material, and railroad ballast. Miscellaneous clays were produced by Watsontown Brick Co., Glen Gery Shale Brick Corp., and Watsontown Mineral Products Co., all in Watsontown. M. E. Wallace Co. produced molding sand from pits near Danville.

A small quantity of agricultural lime was produced by Clyde Starook at his plant in Point Township.

PHILADELPHIA

United States Gypsum Co. continued to operate its gypsum-products plant in Philadelphia County in 1953. Crude gypsum for processing was imported from Nova Scotia. Building and engine sand and gravel were produced by Liberty Corp.

POTTER

Crude oil and natural gas were the only mineral products recovered in Potter County in 1953. Output was from the Oriskany and Bradford sands. The county ranked fourth among Pennsylvania oil-producing areas. Wells, principally in the northwestern part of the county, yielded 211,488 barrels of crude oil during the year.

SCHUYLKILL

The most important mineral commodity produced in Schuylkill County in 1953 was anthracite. The county was the largest producing

area in the United States. The Schuylkill region, of which the county is part, produced the highest percentage of steam sizes in the country. A small tonnage of common clay and crushed limestone was produced by Auburn Brick Co. and the Andreas Quarry Co., Andreas, respectively.

SNYDER

Mineral products of Snyder County in 1953 included crushed limestone for concrete and agricultural purposes and clays for brick and lime. Lime was produced by Carton Confort Cc., Mount Pleasant Mills; the pits of Glen Gery Shale Brick Corp., Beavertown, and Paxton Brick Co., Paxtonville, yielded clays; and crushed limestone was quarried by J. C. Stahl in Franklin Township.

SOMERSET

Somerset County was an important source of soft coal in Pennsylvania in 1953. Fire clay was produced by Hiram Swank's Sons, Inc., Conemaugh Township; General Refractories Co., Fort Hill; and Otto Brick & Tile Works, Salisbury. There was also a minor production of agricultural lime, building sand and gravel, crushed limestone, sandstone, and natural gas. Lime was produced by Addison C. Lottig, Larimer Township, and sand and gravel by Boswell Sand Co. near Boswell. Crushed stone was recovered from the quarries of Somerset Limestone Co., Inc., Jefferson Township; Keystone Lime Co., Elk Lick Township; and the Friedens Block Co., Somerset.

SULLIVAN

The only mineral commodity produced in 1953 in Sullivan County was semianthracite mined from properties at Bernice and Lopez in the northeastern part of the county.

SUSQUEHANNA

Mineral products of Susquehanna County in 1953 were limited to dimension sandstone for building construction. This commodity was quarried by W. H. Swingle, Jr., Harford.

TIOGA

Wells and mines in Tioga County yielded oil, natural gas, soft coal, and sand in 1953. Twenty-five percent of the coal production was strip-mined. Continental Cement Products Co., Inc., produced paving sand. Crude-oil production during the year totaled 2,748 barrels.

UNION

The Faylor Lime & Stone Co., Winfield, and J. L. Iddings were the only mineral producers in Union County in 1953. Crushed and broken limestone produced by these companies was sold for concrete aggregate and agricultural stone.

VENANGO

Venango County ranked second as a producer of petroleum in Pennsylvania in 1953. Wells in the county produced 599,422 barrels of crude oil, virtually all through secondary recovery. Venango County also had a small output of soft coal, almost all of which was produced by strip mining. The Oil City Sand & Gravel Co., Oil City, and Industrial Silica Corp., Utica, reported a small production of molding, building, and paving sand and gravel.

WARREN

The major mineral commodity produced in Warren County in 1953 was petroleum. The 475,139 barrels of crude oil recovered in 1953 placed the county in third position among oil-producing areas in the State.

Building sand and gravel were produced by General Concrete Products Corp., Starbrick.

WASHINGTON

Washington County ranked first in the production of bituminous coal and sixth in the output of oil in Pennsylvania in 1953. Virtually all bituminous coal produced was recovered by underground mining. The 45,000 oil-productive acres in the county yielded 216,502 barrels of crude oil. Other mineral commodities produced in 1953 included natural gas, clay, and stone. Clays were produced by Westmoreland Clay Products Co., Vance Station; Monongahela Clay Products Co., Scott's Hollow; and Donley Brick Co., Washington.

WAYNE

In 1953 General Stone Co. quarried limestone for concrete and agricultural purposes. Wayne Concrete & Sand Works, Lake Ariel, and Chas. Caputo, Honesdale, produced building and paving sand and gravel.

WESTMORELAND

Westmoreland County was one of the larger sources of soft coal in the State.

Quarries in the county yielded a substantial tonnage of sandstone for irregular blocks and for concrete aggregate. Producers of dimension stone were J. C. Beumont Co., Brant Hoover Co., Andrew White Co., and J. S. Robinson Co., Inc. Crushed material was produced by Adam Eidemiller, Greensburg, and Latrobe Construction Co., Lion-onier Township.

Fire clay was recovered by Garfield Refractory Co. from its pit at Boliver and from the pit of Kingston Brick Co., Latrobe. Westmoreland Clay Products Co., Greensburg, produced miscellaneous clays.

WYOMING

The Falls Sand & Gravel Co., Inc., and the Wyoming Sand & Stone Co., both in Falls Township, produced building and paving sand and gravel in 1953.

YORK

The mineral economy of York County was extensive and diversified in 1953. Mineral operations yielded large quantities of lime, cement, stone, and slate, as well as substantial tonnages of clays and sand and gravel. The county ranked second among Pennsylvania counties in production of lime, first in the output of slate, and eighth in the production of crushed and broken limestone.

Manufacture of lime was one of the principal mineral industries. Three plants were operating during the year; and one, J. E. Baker Co., York, produced dead-burned dolomite. Lime for building, agricultural and chemical purposes was produced by J. E. Baker Co. and National Gypsum Co.

Crushed and broken limestone was the only stone produced. Output was sold for concrete aggregate, railroad ballast, agricultural purposes, filler, flux, and whiting. Major producers during the year were Thomasville Stone & Lime Co., Thomasville; and York Stone & Supply Co., Eli Z. Zinn, Inc., Standard Concrete Products Co., Inc., and National Gypsum Co., all of York.

York County was also an outstanding source of cement in 1953. This material came from the Medusa Portland Cement Co. plant in York.

The Funkhouser Co., Delta, was the only producer of slate in the county in 1953. In terms of tonnage, the county ranked first in the State in quantity of slate produced; but the value of the product was low, since it was ground and sold as flour or granules.

Sand and gravel were produced by the Newman Sand-Supply Co., York, for building and paving purposes. Common clay, mainly for brick use, was mined by the Glen Gery Shale Brick Corp.

